PSYCHE

A JOURNAL OF ENTOMOLOGY

ESTABLISHED IN 1874

VOL. XLIII MARCH, 1936 No. 1

TABLE OF CONTENTS.

Two New Thysanoptera from the United States. *J. Douglas Hood.* 1

Orbweavers' Differential Responses to a Tuning-Fork. *F. L. Wells.* 10

Asilids Feeding on Bumblebees in New England. *Stanley W. Bromley.* 14

An American Species of Solenopsia. *Charles T. Brues*.......... 15

An Odd Hibernaculum. *H. Elliott McClure*.......... 19

Two Recently Introduced Species of Amara (Coleoptera: Carabidae). *P. J. Darlington, Jr*.......... 20

New and Little Known Species of Tegenaria (Araneida: Agelenidae). *Harriet Exline*.......... 21

Book Review: Our Enemy the Termite.......... 27

CAMBRIDGE ENTOMOLOGICAL CLUB

OFFICERS FOR 1936-1937

President	O. E. PLATH
Vice-President	F. M. CARPENTER
Secretary	D. DAVENPORT
Treasurer	F. H. WALKER
Executive Committee	THOMAS BARBOUR W. M. WHEELER J. C. BEQUAERT

EDITORIAL BOARD OF PSYCHE

EDITOR-IN-CHIEF

C. T. BRUES, HARVARD UNIVERSITY

ASSOCIATE EDITOR

F. M. CARPENTER

CONSULTING EDITORS

NATHAN BANKS,
Harvard University.

THOMAS BARBOUR,
Harvard University.

A. E. EMERSON,
University of Chicago.

A. L. MELANDER,
College of the
City of New York.

A. P. MORSE,
Peabody Museum,
Salem, Mass.

J. G. NEEDHAM,
Cornell University.

W. M. WHEELER,
Harvard University.

PSYCHE is published quarterly, the issues appearing in March, June, September, and December. Subscription price, per year, payable in advance: $2.00 to Subscribers in the United States; foreign postage, 25 cents extra, Canada 15 cents. Single copies, 65 cents.

Cheques and remittances should be addressed to Treasurer, Cambridge Entomological Club, Institute of Biology, Harvard University, Cambridge, Mass.

Orders for back volumes, missing numbers, notices of change of address, etc., should be sent to F. M. Carpenter, Museum of Comparative Zoology, Cambridge, Mass.

IMPORTANT NOTICE TO CONTRIBUTORS

Manuscripts intended for publication, books intended for review, and other editorial matter, should be addressed to Professor C. T. Brues, Institute of Biology, Harvard University, Cambridge, Mass.

Authors contributing articles over 8 printed pages in length will be required to bear a part of the extra expense, for additional pages. This expense will be that of typesetting only, which is about $2.00 per page. The actual cost of preparing cuts for all illustrations must be borne by contributors; the expense for full page plates from line drawings is approximately $5.00 each, and for full page half-tones, $7.50 each; smaller sizes in proportion.

AUTHOR'S SEPARATES

Reprints of articles may be secured by authors, if they are ordered before, or at the time proofs are received for corrections. The cost of these will be furnished by the Editor on application.

Entered as second-class mail matter at the Post Office at Boston, Mass. Acceptance for mailing at special rate of postage provided in Section 1103, Act of October 3, 1917, authorized on June 29, 1918.

Printed by the Eliot Press Inc., Jamaica Plain, Mass., U. S. A.

PSYCHE

A Journal of Entomology

Volume XLIII

1936

EDITED BY CHARLES T. BRUES

Published by the Cambridge Entomological Club
Biological Laboratories
Harvard University
Cambridge, Mass., U. S. A.

PSYCHE

VOL. XLIII MARCH, 1936 No. 1

TWO NEW THYSANOPTERA FROM THE UNITED STATES

By J. Douglas Hood

University of Rochester, Rochester, N. Y.

The types of the two new species described below are in the author's collection.

Tæniothrips vaccinophilus sp. nov. (Fig. 1)

Female (macropterous). — Length about 0.88 mm. (distended, 1.01 mm.). Color clear pale yellow, with tip of abdomen and sides of thorax just perceptively darker; antennæ concolorous with paler portions of body in segments I and II, III similarly pale at base, lightly shaded with gray distally, IV pale in basal third or fourth, more darkly shaded with gray beyond but somewhat paler in apical portion, V somewhat darker than IV, more briefly pale at base and with the short pedicel gray, VI about concolorous with darker portions of V, somewhat paler basally, VII and VIII uniform gray but paler than VI; wings of fore pair nearly colorless in basal fourth, yellowish beyond, the anal area (scale), a narrow line along posterior margin in distal three-fourths, and a broader patch along anterior margin of second fourth, light gray; ocellar pigmentation bright red.

Head about two-thirds as long as greatest postocular width, distinctly broader across eyes; cheeks smooth, narrowing only slightly to eyes, roundly converging to the distinctly narrower base, thus not swollen; occiput with about five faint transverse lines of sculpture, of which the anterior is the most distinct; vertex slightly elevated in the ocellar area, distinctly excavated between it and insertion of antennæ; frontal costa with an exceedingly minute V-shaped notch; interocellar setæ short and pale, about 13μ in length and somewhat shorter than postocellars, a similar but more minute pair of setæ near inner margins of eyes

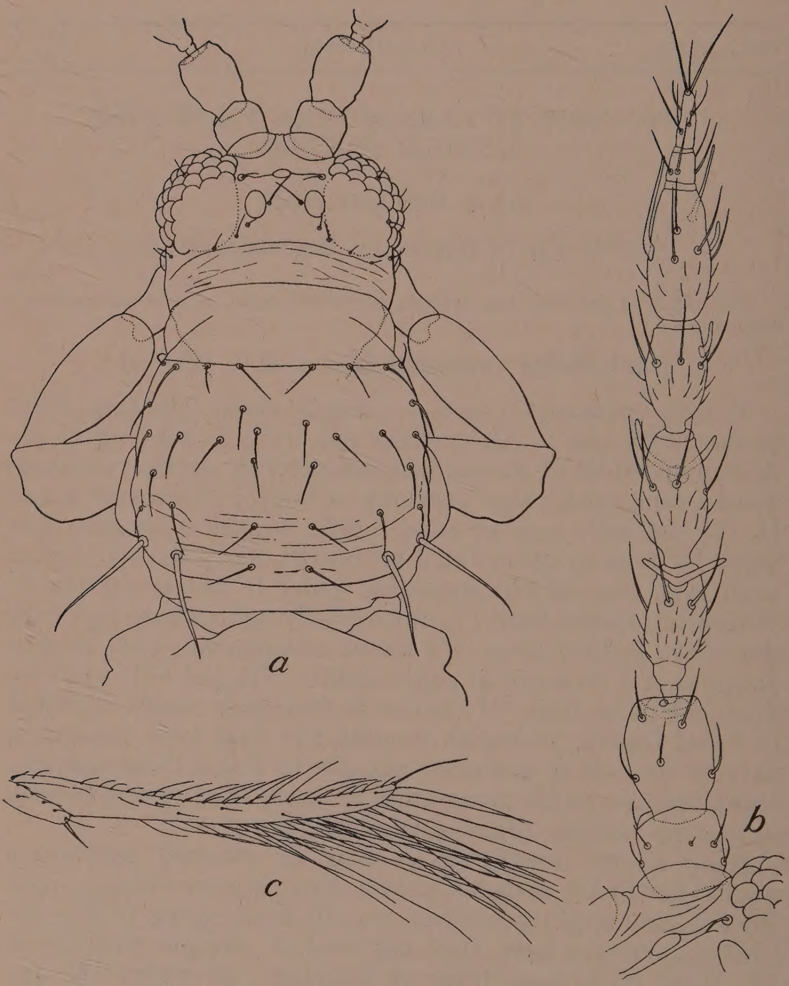


Fig. 1. *Tæniothrips vaccinophilus* sp. nov., ♀, holotype. *a*, head and prothorax; *b*, right antenna; *c*, right fore wing.

directly laterad of median ocellus; postocular and genal setæ minute and pale, two pairs of the former, three pairs of the latter. *Eyes* rather large and prominent, somewhat protruding, two-thirds as long as head and 0.8 as wide as their interval. *Ocelli* subequal in size, about 13μ in diameter, posterior pair about 18μ apart and 10μ from median ocellus, which is directed forward and overhanging. *Antennæ* three times as long as head, rather stout, segments III and IV with the usual forked trichomes short, IV and V with pedicel short. *Mouth-cone* about attaining posterior margin of prosternum (maxillary palpi not clearly visible in the type material).

Prothorax about 1.4 times as long as head and about 1.4 times as wide as long; pronotum almost smooth, with a few faint transverse lines posteriorly, of which one between the inner pair of major setæ is most distinct; all setæ pale yellow, the outer pair at posterior angles 50μ, inner 44μ, between the latter and midway between the heavy transverse line of sculpture and the posterior margin only *one pair of minor setæ*, these about 24μ apart and subequal to interocellars and a number of other setæ scattered over pronotum. Fore wings nearly 11 times as long as width just beyond scale, recurved at tip; setæ pale in color, anterior vein with a sub-basal group of three arising opposite distal half of scale, followed by a second group of three in the dark portion of wing and by three more in distal half of wing, the last two in the series closer together; posterior vein with three nearly equidistant setæ in distal half of wing; costal margin with about 16 setæ.

Abdomen of normal form, about 1.24 times as wide as pterothorax, nearly free of sculpture, *posterior margin of tergum VIII without comb;* tergum X not divided along median line; dorsal setæ on IX and X about 68μ long, those on IX much stouter.

Measurements of holotype (♀): Length about 0.88 mm. (distended, 1.01 mm.; head, length 0.065 mm., width across eyes 0.103 mm., width across cheeks 0.099 mm., width at base 0.093 mm.; eyes, length 0.044 mm., width 0.032 mm., interval 0.040 mm.; prothorax, median length of pronotum 0.092 mm., width 0.130 mm.; pterothorax, width 0.164 mm.; fore wings, length 0.423 mm., width just beyond scale 0.039

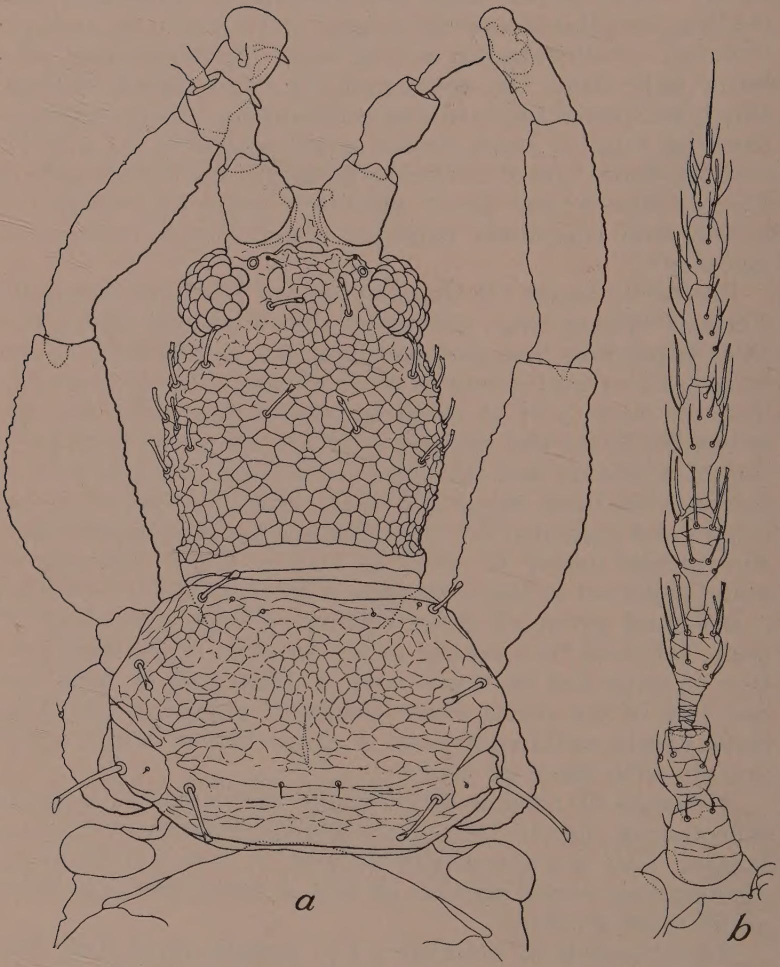


Fig. 2. *Eurythrips sculpturus* sp. nov., ♀. *a*, head and prothorax, paratype; *b*, right antenna, holotype.

mm., at middle 0.027 mm.; abdomen, greatest width 0.204 mm.

Antennal segments:	1	2	3	4	5	6	7	8
Length (μ):	20	30	34	31	27	33	8	15
Width (μ):	22	23	17	17	17	17	7	5

Total length of antenna 0.198 mm.

Described from 9 females taken by the author on a species of Blueberry (*Vaccinium sp.*), at Canandaigua Lake, New York, May 27, 29, and 30, 1934 [Hood Nos. 567 and 568].

The assignment of this species to the heterogeneous collection of forms now reposing in *Tæniothrips* does not thoroughly satisfy me; yet I dislike to erect a new genus for it until a thorough study has been made of its relatives. The number of segments in the maxillary palpus cannot be determined with certainty from my material, though I strongly suspect that there are but two instead of the conventional three.

It is certainly a most distinct species. The small size, pale color, minute frontal notch, short abdominal setæ, and the absence of a comb from the eighth abdominal tergum are all important characters in its recognition; but the presence of only two minor setæ on the posterior margin of the pronotum, instead of the usual six or eight, is distinctive.

Eurythrips sculpturus sp. nov. (Fig. 2)

Female (brachypterous).— Length about 1.4 mm. Color of head, thorax, and legs bright yellow, all somewhat shaded with brown at sides, pterothorax darkened along anterior margin; abdomen brown, terga III-VIII each with the subbasal line darker and with a dark gray quadrate blotch occupying the basal half of the median fourth beyond the line, the tube blackish brown and much darker than rest of abdomen; pigmentation in fat-body maroon red, present in the ocellar region, in sides of head at base, sparingly in prothorax, and abundantly along sides of pterothorax and abdomen and in abdominal segment II, entirely wanting in tube and all appendages; antennæ about concolorous with head in segment I, II darker, especially at sides, III yellow, shaded with gray in expanded portion, especially at sides, IV-VI with pedicels grayish yellow and the swollen distal portions gray-brown to blackish brown and successively darker, remainder of antennæ nearly or quite blackish brown and concolorous with tube, the pedicel of VII somewhat paler.

Head about 1.36 times as long as greatest width, which is at middle of cheeks; the latter decidedly rounded to near eyes, sharply constricted just behind eyes, and converging in basal third, with a somewhat wider and distinct basal collar; at this level the head is only slightly broader than at the postocular constriction; width across eyes about 0.9 the greatest width across cheeks; the latter roughened as seen from above because of rather heavy lines of reticulation which form distinct polygons over the whole surface of head, and with six pairs of pale, curved, expanded setæ about 18μ in length; postocular setæ expanded and curved at tip, 27μ long; a slenderer but otherwise similar pair of occipital setæ, 27μ long and 50μ apart, situated about midway between postoculars and base of head; vertex and occiput elevated, the former somewhat excavated in front for the reception of the forwardly-directed median ocellus, with a pair of strong postocellar setæ which are similar to occipitals, and a slender pointed pair directly between the vertical pores and the median ocellus. *Eyes* rounded, strongly protruding, coarsely facetted, only 0.22 as long as head, their length distinctly greater than their width, which is approximately half their interval. *Ocelli* subequal, posterior pair much farther apart than their distance from anterior ocellus, their diameter (15μ) about half their interval; median ocellus with its posterior margin in the same transverse line as anterior margin of eyes. *Antennæ* about twice as long as head, the four basal segments marked with weak lines of reticulation which are most distinct on II; III-VII subclaviform, the pedicels of about equal width but successively shorter on IV-VII, VIII narrowed at base; sense-cones long and slender, disposed on inner (and outer) surfaces of segments as follows: III 1 (1), IV 1 (1), V 1 (1^{+1}), VI 1 (1^{+1}); setæ long and slender, the major dorsal ones on II-VI knobbed. *Mouth-cone* short and broadly rounded, about attaining middle of prosternum.

Prothorax along median line of pronotum about two-thirds as long as head, and (inclusive of coxæ) about 1.8 times as wide as long, with a short vestigial internal median thickening and a nearly straight thickening across posterior fourth, between posterior marginal setæ, this line bearing a pair of minute setæ (30μ apart) at middle; most of dorsal surface faintly subreticulate; epimeron not or only slightly fused with pronotum; anterior marginal setæ very minute, the others long, dilated and obliquely truncate at tip, the epimeral 46μ and longest, the others 32-34μ, coxals dilated apically but minute (13μ). *Pterothorax* slightly wider than prothorax; mesonotum with faint anastomosing lines over whole surface, these generally forming transversely elongate areas; metanotum polygonally subreticulate. *Legs* normal, fore tarsi with a small slender tooth; all femora and tibiæ distinctly reticulate and thus roughened in appearance. *Wings* short and pad-like, not attaining base of abdomen, fore pair with a single seta comparable in size and structure with posterior marginals.

Adomen large and heavy, about 1.6 times as wide as prothorax across coxæ, polygonally subreticulate in terga I-IX, except median portion of the last, distal portion of II-IX, and basal to the dark line across III-VIII; reticulation of I somewhat coarser than that of metanotum or of the other terga, the lines at sides of II and across middle of other terga minutely asperate; all major setæ at sides of segments I-VIII similar in form to postoculars and prothoracics, i.e., moderately stout, expanded and obliquely truncate apically, this giving them a somewhat golf-club-like form when seen from the proper direction, the lateral setæ on VII 60μ, on IX 107μ, dorsals on IX (76μ) scarcely hooked, terminal setæ pointed, 77μ.

Measurements (mostly of paratype,* ♀): Length about 1.3 mm. (fully distended, 1.4 mm.); head, length 0.213 mm., width across eyes 0.140 mm., width at posterior margin of eyes 0.125 mm., width at middle of cheeks 0.157 mm., width near base 0.130 mm.; eyes, length 0.047 mm., width 0.037 mm., interval 0.070 mm.; ocelli, diameter 0.015 mm., inter-

---

*In order that the coloration of the holotype might be preserved, it was deemed better to macerate the topotypic paratype in NaOH and to measure it. Accurate measurements are possible only in specimens so treated and then mounted to float free in balsam, without coverglass pressure.

val between posterior ocelli 0.030 mm., distance between anterior and posterior 0.018 mm.; prothorax, median length of pronotum 0.142 mm., width (inclusive of coxæ) 0.253 mm.; pterothorax, greatest width 0.266 mm.; abdomen, greatest width (at segment III) 0.415 mm.; tube, length 0.165 mm. (in holotype 0.139 mm.), width at base 0.071 mm. (holotype, 0.063 mm.), at apex 0.027 mm. (holotype, 0.027 mm.).

Antennal segments:	1	2	3	4	5	6	7	8
Length (μ):	43	55	67	63	70	55	40	41
Width (μ):	41	34	31	29	27	24	20	13

Total length of antenna 0.434 mm.

Male (brachypterous). — Length about 1.0 mm. (partially distended 1.11 mm.). Color and structure essentially as in female, but with the abdomen, particularly segment IX, paler, this being nearly yellow and darkened at sides with brown; transverse chitinous line near posterior fourth of pronotum heavier and darker, elevated, somewhat overhanging posteriorly, weaker between the two setæ at middle; lateral seta on segment IX of abdomen short (32μ).

Measurements of allotype (♂): Length 1.0 mm.; head, length 0.151 mm., width across eyes 0.110 mm., width at posterior margin of eyes 0.099 mm., width at middle of cheeks 0.125 mm., width near base 0.114 mm.; eyes, length 0.033 mm., width 0.024 mm., interval 0.062 mm.; postocular setæ, length 0.027 mm.; prothorax, median length of pronotum 0.090 mm., width (inclusive of coxæ) 0.200 mm.; anterior lateral setæ, length 0.020 mm., midlaterals 0.033 mm., epimerals 0.036 mm., posterior marginals 0.034 mm.; pterothorax, greatest width 0.196 mm.; abdomen, greatest width (at segment III) 0.249 mm.; tube, length 0.099 mm., width at base 0.049 mm., at apex 0.023 mm.

Antennal segments:	1	2	3	4	5	6	7	8
Length (μ):	37	43	52	48	53	43	32	34
Width (μ):	33	28	26	25	23	20	18	12

Total length of antenna 0.342 mm.

Described from three females and three males, taken by Dr. J. W. Folsom, at Tallulah, Louisiana, April 2 (1 ♀, paratype), May 11 (1 ♀, holotype, and 1 ♂, allotype, Hood No. 566), and October 4, 1934, "in humus".

It is not difficult to distinguish this interesting little species from its congeners. The distinct dorsal reticulation, the oblique truncation of the dilated tips of the stout setæ, and the transverse pronotal thickening are all peculiar to it. It bridges beautifully the gap which has previously existed between the group comprising *Sagenothrips*, *Terthrothrips*, *Glyptothrips* (and possibly one or two other genera) and that portion of the *Trichothrips* group which culminates in *Malacothrips* and *Eurythrips*. On the basis of the definition alone of *Sagenothrips* it would seem more properly assignable to that genus; but I find little excepting sculpture to exclude it from the older genus *Eurythrips*. Furthermore, in the series of *Eurythrips* before me, a complete transition is observable in sculpture from those species which are nearly glabrous above to such species as the present one, in which the dorsal anastomosing lines take on a polygonal disposition and become pronouncedly elevated. Differences in sculpture which are of degree rather than of kind are seemingly never of generic, and certainly never of tribal, value in the Thysanoptera. Our classificatory scheme of the group contains many super-generic terms which have been proposed as the result of an eager and premature search for differences, untempered by an equal assiduity in a search for similarities.

ORBWEAVERS' DIFFERENTIAL RESPONSES TO A TUNING-FORK

By F. L. Wells

Harvard Medical School

Patent factors in this behavior situation are, species and (developmental) age of the spider, position of the spider with reference to the nest, position of fork with reference to spider. Probably significant, but in the present circumstances less readily observed factors include general tensional state of spider (as nutritional), conditions of temperature and illumination (season, night and day; present observations mostly of daytime behavior), individual and sex differences.

Present reference is to females half grown or more, unless otherwise specified. Species observed include mainly the common: *Epeira insularis* (30),[1] *E. trifolium* (15), *E. domiciliorum* (8), *E. stellata* (6), *E. cavatica* (40), *Argiope aurantia* (40), *A. trifasciata* (15). *Cavatica* was observed in northern New Hampshire, others mainly in eastern Massachusetts. The earliest was of a young *A. aurantia* (7-7-35); the last of an old *A. trifasciata* (11-9-35). The fork was an ordinary Hartmann, designated C, 128. Normally it was sounded by striking smartly against the examiner's knee or forearm. To control-observations with the fork silent, all spiders compared were, with the rarest exceptions, inert (Peckham, p. 391, also Peters, '31, p. 698; Grünbaum, pp. 288-290). Neither did the retreat-dwellers respond to illumination by pocket flashlight, incidental to observation and photography at night. All observations were in the field, with minimal disturbance of spider's domestic economy.

The patterns of behavior distinguished, and the circumstances in which they appeared, are in general as follows:

---

[1] Numerals are approximate number of individuals observed; some on one occasion only, others repeatedly, and over several weeks. Essential help in taxonomy and nomenclature is received from Professor Nathan Banks and Miss E. B. Bryant.

Dropping: As often reported, the spider, on the near approach of the fork, drops any distance from a few inches, to the substratum; returns after a very variable interval. In these observations *not* a characteristic response to the vibrating fork in any position. It is more so in smaller species, and is seen in exceptional individuals among the present. Among them, it is more usual in response to a relatively massive stimulus.

Folding: The spider immobilizes, with legs folded against body, the miscalled "death-feint." In Epeiras associated with dropping; not a normal response to present fork stimulation; as here seen, rather a product of other, and more massive accidental stimulus.

Shifting: The spider being at rest, moves the feet somewhat, but does not change its station. A response apparently arising when the fork, however presented, does not make on the receptors enough impression to set up any of the more differentiated responses noted below (cf. Schaxel, cited by Grünbaum, p. 287). Most strikingly seen in colonies of *E. cavatica;* a vibrating fork touched to a strand often elicited shifting through the colony generally, a few of the nearest making actual start for it.

Approaching: The spider resting at orb-center or in retreat, moves as to attack the fork held in contact with orb. Normal for all present species when resting at orb-center (Details on *E. diademata,* Peters, '31, p. 735). Less positive in long-matured (senescent?) individuals. For spiders in retreat (Boys; Barrows, p. 318): First movement (to center) frequent for *E. cavatica,* occasional for *E. trifolium, E. domiciliorum* (probable individual difference); less frequent for *E. insularis,* though on occurrence, relatively violent.

Shaking and/or Arching: The spider, resting at orb-center, arches legs, moving abdomen away from web; shakes web, sometimes for a whole minute, (function, cf. Barrows, p. 320; for *E. diademata,* Grünbaum, pp. 295, 297). Seen here most in early adult *A. aurantia* to fork held near venter, with orb between. Young *A. trifasciata* normally tilted the abdomen away from the fork, held to venter or dorsum.

Shuttling: The spider, resting at orb-center, moves through the web and assumes a corresponding position on the opposite side. Seen almost exclusively in *A. aurantia,* in response to fork presented to the dorsum, no web intervening. Young individuals accomplished it nimbly, the older slowly and clumsily; in mid-season it was little observed. Individual (occasional?) differences marked.

Spreading: The spider resting at orb-center, or elsewhere in the web, extends one or more pairs of legs, and holds them in extended position; in response to a vibrating fork near the body, but not in contact with the web. Seen most developed in *E. insularis,* less in *E. trifolium* and *A. aurantia, E. domiciliorum, E. cavatica.* In extreme cases (Epeira) all legs except one or two by which spider hangs, bend in opisthotonic spasm away from fork held to venter between them. If fork is held to dorsum, legs may similarly bend back towards fork. More noticed is orientation of venter towards fork (Peckham, p. 391, for E. diademata, Grünbaum pp. 292, 295), even through 180°, preserving tonic extension of legs. In *aurantia,* spreading did not generally involve more than the first two pairs and did not occur if the orb was between; in trifasciata it was little seen. Occasionally, spreading was observed (in *E. trifolium* and *cavatica* only) when fork was presented to venter of spider on back, folded in tonic immobility (Peckham, pp. 390-392).

Reaching: Flexor movements alternating with extensor, to stimulus as in "spreading". Seen most in *A. trifasciata,* marked also in *E. domiciliorum, E. stellata,* and *A. aurantia.* These were relatively free, waving movements; in *E. insularis* they were often rapid twitches, through a smaller arc. Fork is not grasped in these movements though within easy reach, and often touched (Peckham, p. 391).

Seizing: The reaching movements are more effective, clinging to the fork, there is swathing and attempt to bite; on withdrawal of fork, spider remains with it, sometimes to complete detachment from web. Seen in larger, maturer orb-weavers generally, but marked occasional (individual?) differences. Besides this seizure of approximated fork not in contact with web (if web is between, spider climbs through), fork normally seized when vibrated in contact with web (details for *E. diademata,* Peters '31, pp. 721 ff.,

PSYCHE

A Journal of Entomology

Volume XLII

1935

EDITED BY CHARLES T. BRUES

Published by the Cambridge Entomological Club
Biological Laboratories
Harvard University
Cambridge, Mass., U.S.A.

PSYCHE

INDEX TO VOL. XLII. 1935

INDEX TO AUTHORS

Banks, N. A Few New North American Neuroptera. 53.

Banks, N. The Males of Certain Priocnemis (Psammocharidæ). 162.

Banks, N. Metatrichia in New England (Scenopinidæ). 162.

Bates, M. A New Riodinid from Panama (Lepidoptera). 149.

Bell, E. L. A New Hesperid from Haiti (Lepidoptera; Rhopalocera). 63.

Bequaert, J. C. Oriental Nemestrinidæ. 123.

Brues, C. T. Varietal Forms of Peripatus in Haiti. 58.

Bryant, E. B. A Few Southern Spiders. 73.

Bryant, E. B. A Rare Spider. 163.

Carpenter, F. M. A New Name for Lithomyrmex Carp. (Hymenoptera).

Carpenter, F. M. New Nearctic Mecoptera, with Notes on Other Species. 105.

Darlington, P. J., Jr. Three West Indian Carabids in Florida. 161.

Darlington, P. J., Jr. *Megacepha (Tetracha) affinis angustata* Chev. (Coleoptera: Cicindelidæ) North of Mexico. 161.

Darlington, P. J., Jr. West Indian Carabidæ II: Itinerary of 1934; Forests of Haiti; New Species; and a New Key to Colopodes. 167.

Holway, R. T. Preliminary Note on the Structure of the Pretarsus and Its Possible Phylogenetic Significance. 1.

Hull, F. M. Some Mimetic Flies, with the Description of Two New Species from North America (Syrphidæ; Diptera). 99.

Madwar, S. The Biology and Morphology of the Immature Stages of *Macrocera anglica* Edwards. 25.

Mann, W. M. Two New Ants Collected in Quarantine. 35.

Park, O. Beetles Associated with the Mound-Building Ant, *Formica ulkei* Emery. 216.

Shaw, F. R. Notes on the Mycetophilidæ with Descriptions of New Species. 84.

Townsend, L. H. The Mature Larva and Puparium of *Physocephala sagittaria* (Say) (Diptera, Conopidæ). 142.

Wheeler, G. C. The Larva of Allomerus (Hymen.: Formicidæ). 92.

Wheeler, W. M. New Ants from the Philippines. 38.

Wheeler, W. M. Myrmecological Notes. 68.

Wheeler, W. M. The Australian Ant Genus Mayriella Forel. 151.

INDEX TO SUBJECTS

All new genera, new species and new names are printed in SMALL CAPITAL LETTERS.

ACANTHOCLINEA, 69
ACANTHOLEPIS AUREA SUBSP. PUNCTATICEPS, 46
ACANTHOLEPIS CHAPMANI, 47
ACROPYGA (RHIZOMYRMA) INDOSINENIS, 72
Agallia constricta, 12
Agenia dakota, 162
Agenia iridipennis, 162
Agenia nigripilosa, 162
Agenia pulchrina, 162
AGONUM (S. S.) LAETIFICUM, 200
Allodia ornaticollis, 88
Allomerus octoarticulatis var. *demeraræ*, 92
ALLOTOMYIA BOREALIS, 56
Anax junius, 6
Anisomorpha buprestoides, 11
APENES APTERUS, 209
APENES OVALIS, 210
ARDISTOMUS ALTICOLA, 173
Asilidæ, 17
Astenophylax argus, 16
Atriadops, 137
Atriadops javana, 137
Australian Ant Genus Mayriella, 151
Automeris io, 16

Biology and Morphology of the Immature Stages of *Macrocera anglica*, 25
Bittacus punctiger, 109
Boletina groenlandica, 88
Boreidæ, 109
Boreus borealis, 116
Boreus brumalis, 112
Boreus californicus, 117
BOREUS CALIFORNICUS VAR. FUSCUS, 117
BOREUS ELEGANS, 119
BOREUS GRACILIS, 118
BOREUS ISOLATUS, 115
Boreus nivoriundus, 113
BOREUS NIX, 114
BOREUS PILOSUS, 114
Boreus reductus, 118
Boreus unicolor, 113
BORIOMYIA FURCATA, 55
Brachypanorpa montana, 105
BRADYCELLUS (STENOCELLUS) SELLEANUS, 204
Brochymena arborea, 13

CAMPONOTUS (MYRMOCLADOECUS) SANCTÆ-FIDEI WEBERI, 72
CARDIOCONDYLA (PROSOPIDRIS) SIMA, 41
CERIOIDES ALDRICHI, 99
Ceuthophilus maculatus, 10
Ceyloniola, 140
Ceyloniola magnifica, 140
Chalybion cæreuleum, 17
CHLÆNIUS JAMAICÆ, 201
CHRYSOPIELLA MINORA, 55
Coleoptera associated with *Formica ulkei*, 218
Coleoptera reported from nests of *Formica exsectoides*, 219
Colpodes, 181
Colpodes æquinoctialis, 198
COLPODES AGONELLUS, 187
COLPODES ALTIFLUMINIS, 198
COLPODES AMONE, 190
COLPODES BARAGUA, 197
COLPODES BRUESI, 196
COLPODES CHRISTOPHE, 191
COLPODES CONSTRICTICEPS, 194
COLPODES CYCHRINUS, 192
COLPODES FABER, 185
Colpodes jægeri, 192
COLPODES LATELYTRA, 199
Colpodes mannerheimi, 198
COLPODES MARCUS, 188
COLPODES PAVENS, 188
COLPODES PUNCTUS, 195
COLPODES SUBCORDENS, 192
COLPODES SUBOVALIS, 186
COLPODES TIPOTO, 193
COLPODES VISITOR, 196
COLPODES WOLLA, 189
Corydalis cornuta, 14

Diabolus, 68
DICERATOCLINEA, 69
DILOBOCONDYLA CHAPMANI SUBSP. RUFOBRUNNEA, 43
Diodontolepis, 71
Diogmites umbrinus, 17
Dolichoderus doriæ, 69
Dolichoderus (*Hypoclinea*) *monoceros*, 68
Dolichoderus scabridus, 69
DRASSYLLUS WALLACEI, 77

DYSCHROMUS TIBURONICUS, 179

ERIMELOPHORUS, 71
EUCAERUS HAITIANUS, 210
EULITHOMYRMEX, 91
Eumenes bollii, 99
EXECHIA AVICULATA, 89
EXECHIA POLLEX, 89

Formica advena, 71
Formica nigriventris, 70
Formica ulkei, 216

GALERITA MONTANA, 211
Gnaphosidæ, 73
Gryllidæ, 10
Gryllatalpa borealis, 10
Gryllotalpidæ, 10
Gryllus pennsylvanicus, 10

HERPYLLUS EMERTONI, 73
Herpyllus floridanus, 74
Hesperid from Haiti, 63
Hirmoneura, 123
Hirmoneura (Hirmoneura) austeni, 125
Hirmoneura (Hirmoneura) cingulata, 125
HIRMONEURA (HIRMONEURA) COCKERELLI, 125
Hirmoneura (Hirmoneura) opaca, 127
Hirmoneura (Hirmoneurilla) ochracea, 131
HIRMONEURA (HIRMONEURILLA) VITALISI, 132
Hirmoneura (Hirmoneuropsis) basalis, 133
HIRMONEURA (HYRMOPHLAEBA) LAOTICA, 134
Hirmoneura (Indohirmoneura) brunnea, 128
Hirmoneura (Indohirmoneura) coffeata, 128
Hirmoneura montana, 127
Hirmoneura (Neohirmoneura) annandalei, 129
Hirmoneura (Neohirmoneura) orientalis, 130
Hirmoneura (Neohirmoneura) philippina, 130
Hirmoneurilla, 131
Hirmoneurinæ, 123
Hirmoneuropsis, 133
Hyrmophlæba, 134

Immature Stages of *Macrocera anglica,* 25
Indohirmoneura, 128
Ithone, 14
Ithonidæ, 14

Larva and Puparium of *Physocephala sagittaria,* 142
Larva of Allomerus, 92
Lasiophanes, 70
LEBIA GIBBA, 207
LEBIA HAITIANA, 205
LEBIA NIGRITA, 206
Locustidæ, 9
LOXANDRUS MUTANS, 180
LYCOSA ORNATIPES, 78
Lycosidæ, 78

Macrocera anglica, 25
MACROMISCHA LUCILIÆ, 35
Males of Priocnemis, 162
Mantispa brunnea, 15
Mantispidæ, 15
Mayriella, 151
Mayriella abstinens, 154
MAYRIELLA ABSTINENS HACKERI, 157
MAYRIELLA ABSTINENS VENUSTULA, 158
MAYRIELLA SPINOSIOR, 159
Megacephala (Tetracha) affinis angustata, 161
MEGALOMUS UNIFORMIS, 56
Melophorus, 71
Melophorus bagoti, 71
Melanoplus bivittatus, 9
Melophorus hirsutus, 71
Melophorus spinisquamis, 71
Melophorus wheeleri, 71
METAPONE GRACILIS, 38
Metatrichia bulbosa, 162
Metatrichia in New England, 162
Mimetic Flies, 99
MONOCERATOCLINEA, 68
Mycetophilidæ, 84
Myrmecological Notes, 68
Myrmecorhynchus, 71
Myrmecorhynchus emeryi, 71

Neohirmoneura, 129
NESOLASIUS, 50
New Ants Collected in Quarantine, 35
New Ants from the Philippines, 38
New Name for Lithomyrmex, 91
New Nearctic Mecoptera, 105
North American Neuroptera, 53
Notes on Mycetophilidæ, 84
Notoncus, 71
Notoncus ectatommoides, 71
Nycterimorpha, 141
Nycterimorpha pyralina, 141
Nycterimyia, 138
Nycterimyia dohrni, 139
Nycterimyia fenestro-clathrata, 140

Nycterimyia fenestro-inornata, 140
Nycterimyia kerteszi, 140
NYLANDERIA CONSUTA, 72

Oligotoma, 9
Oriental Nemestrinidæ, 123
Oxydrepanus rufus, 161

PANORPA BIFIDA, 107
PANORPA FLEXA, 108
PANORPA INSOLENS, 106
Panorpa isolata, 107
Panorpa latipennis, 109
Panorpa lugubris, 105
Panorpa rufescens, 15
Panorpa speciosa, 107
Panorpa submaculosa, 109
Panorpa virginica, 106
Panorpidæ, 105
PARDOSA OCALA, 81
PENTAGONICA FLAVIPES PICIPES, 211
PERILEPTUS DENTIFER, 177
PERILEPTUS MINUTUS, 178
Peripatus dominicæ, 58, 60
PERIPATUS DOMINICÆ VAR. BASILENSIS, 62
PERIPATUS DOMINICÆ VAR. DARLINGTONI, 62
Peripatus dominicæ var. *haitiensis*, 61
PERIPATUS DOMINICÆ VAR. LACHAUXENSIS, 61
Peripatus in Haiti, 58
Peripatus juliformis var. *swainsonæ*, 59
Peripatus manni, 61
Periplanta americana, 7
Phasmidæ, 11
PHLŒOXENA MONTANA, 208
Phyllophaga fusca, 13
Physocephala sagittaria, 142
POANES BATESI, 63
Poecilochroa decipiens, 75
POGONODAPTUS ROSTRATUS, 204
Polybiomyia reinhardi, 99
Polyrchachis cuspidatus, 68
PONERA LEÆ NORFOLKENSIS, 72
Priocnemis, 162
Priocnemis fortis, 162
Priocnemis fulgifrous, 162
Priocnemis nebulosus, 162
Priocnemis pompilus, 162
Prodidomus rufus, 164
Prolasius, 71
PROSOPIDRIS, 40
Prosthesima floridana, 74
Psalis, 11
PSAMMOLEON ARIZONENSIS, 53
PSAMMOLEON DECIPIENS, 53
PSAMMOLEON PARALLELA, 54
PSEUDAPTINUS MARGINICOLLIS FUMIPES, 212
Pseudaptinus (Thalpius) cubanus, 161
PSEUDOLASIUS (NESOLASIUS) TYPHLOPS, 50
PSEUDOMORPHA CARIBBEANA, 214
Pseudonotoncus, 71
Pseudonotoncus hirsutus, 71
Pteronarcys dorsata, 9

Rare Spider, 163
RHYMOSIA TRIANGULARIS, 89
Riodinid from Panama, 149
Rodinia, 149
RODINIA BARBOURI, 149

Schizocosa duplex, 80
Selenophorus discopunctatus, 161
SELENOPHORUS FLAVILABRUS CUBANUS, 203
Sergiolus decipiens, 75
Sergiolus tribolus, 76
Sialidæ, 14
Siphlonurus, 7
Siricidæ, 17
Southern Spiders, 73
Sphecidæ, 17
Stenocnemis jägeri, 198
STENOCREPIS (S. S.) PELUSTRIS, 202
Structure of the Pretarsus and its Possible Phylogenetic Significance, 1

Tabanus atratus, 16
TACHYS (S. S.) CARIB, 176
TACHYS (TACHYTA) NOCTIS, 174
TACHYS (TACHYURA) TRITAX, 175
TACHYS TRECHULUS, 177
Tenodera sinensis, 8
Tenthredomyia abbreviata, 101
Tenthredomyia ancoralis, 101
TENTHREDOMYIA MIME, 101
Tenthredomyia tridens, 101
Termopsis angusticollis, 8
Tettigoniidæ, 10
Tremex columba, 17
TRICHOMELOPHORUS, 71
Trichopsideinæ, 135

West Indian Carabidæ, 161

ZATAPINOMA WHEELERI, 36
ZATAPINOMA WILLIAMSI, 44
ZUPHIUM HAITIANUM, 213

Peters '33, also Grünbaum, p. 292), if sufficiently vibrating when spider reached it. Seizing movements normally ceased as vibration of fork subsided; might or might not be renewed upon reactivation of fork (cf. Peters as above; also Rabaud pp. 37, 41).

The above tuning-fork responses are much modified and decreased when the spider has a support other than the web (not especially in Grünbaum's observations, p. 296), or when the spider is not at rest. In the individuals compared (mostly *cavatica, aurantia* and Uloborus) there was little difference in the responses observed to a comparison fork of designated 256 rate (cf. Barrows, p. 321; Peckham, p. 391; Grünbaum, p. 295). To the much greater volume of sound from a dry-cell operated telegraph buzzer similarly presented, practically all individuals observed were inert (Peckham, p. 390, contrary to Savory, pp. 90-91; cf. also Peters, '31, p. 705).

REFERENCES

Barrows, W. M. The reactions of an orb-weaving spider, Epeira sclopetaria Clerck, to rhythmic vibrations of its web. *Biol. Bull.*, 1915, 29, 316-332.

Boys, C. V. The influence of a tuning-fork on the garden spider. *Nature*, 1881, 23, 149-150.

Grünbaum, A. A. Ueber das Verhalten der Spinne (*Epeira diademata*) besonders gegenüber Vibratorischen Reizen. *Psychol. Forschung*, 1927, 9, 275-299.

Peckham, J. W. and Peckham, E. G. Some observations on the mental powers of spiders. *J. Morphology*, 1887, 1, 383-419.

Peters, H. Die Fanghandlung der Kreuzspinne. Experimentelle Analysen des Verhaltens. *Zsch. f. vergl. Physiol.*, 1931, 15, 693-749.

Peters, H. Weitere Untersuchung über die Fanghandlung der Kreuzspinne (Epeira diademata Cl.) *Zsch. f. vergl. Physiol.*, 1933, 19, 47-67.

Rabaud, E. Recherches expérimentales sur le comportement de diverses Araignées. *Année Psychol.*, 1922, 22, 21-57.

Savory, T. H. The biology of spiders. New York: Macmillan, 1928, pp. xx + 376.

ASILIDS FEEDING ON BUMBLEBEES IN NEW ENGLAND

BY STANLEY W. BROMLEY

In Dr. O. E. Plath's excellent book on Bumblebees ("Bumblebees and Their Ways", Macmillan Company, New York City, 1934) he records two instances (p. 62) of bumblebees captured by Robber flies. In both cases the large bumblebee-like *Bombomima* (*Dasyllis*) *grossa* (Fabr.) was the captor. As I have collected a number of records of Robber flies preying on bumblebees, it might be of interest to present a summary of these records. Five different species of Asilids were observed to kill bumblebees in New England with a total of 76 bumblebees[1] recorded as prey. The dates of capture range from 1910 to 1922 and were confined to Southern New England, most of them from Massachusetts.

ASILID	BUMBLEBEE PREY RECORDS
PROCTACANTHUS PHILADELPHICUS Macq.	30
DIOGMITES (DEROMYIA) UMBRINUS Loew	29
PROCTACANTHUS RUFUS Williston	10
PROMACHUS FITCHII Osten Sacken	6
BOMBOMIMA (DASYLLIS) GROSSA (Fabr.)	1

On page 63, Dr. Plath states that he has never seen the near relative of *B. grossa*, *B. thoracica* (Fabr.), attack bumblebees, although he believes it probable that this species may do so. *Thoracica* is in general much more common in Southern New England than *grossa*, but I have never seen it feeding on bumblebees either, although I have on several occasions seen *thoracica* strike bumblebees in flight and unsuccessfully grapple them, indicating that the spirit at least is willing.

---

[1] The bumblebees herein referred to as prey of Asilids in New England were all workers and males of the following species listed in order of frequency: *Bombus vagans* F. Sm., *B. impatiens* Cress., *B. perplexus* Cress., *B. affinis* Cress., *B. fervidus* (Fab.), *B. terricola* Kby., and *B. bimaculatus* Cress. Some of these were recorded in my papers on Asilid Prey, Psyche XXI, No. 6, pp. 192-198 (1914) and Psyche XXX, No. 2, pp. 41-45 (1923).

AN AMERICAN SPECIES OF SOLENOPSIA

By Charles T. Brues

Biological Laboratories, Harvard University

The genus Solenopsia was first described by Wasmann in 1899 to include a very peculiar subapterous species of Diapriidæ from Europe. This extremely minute insect, found in nests of the thief ant, *Solenopsis fugax*, in Holland, France, and Italy is exceedingly ant-like in form, even to the development of a scale-like node on the dorsal face of the abdominal petiole. Of this species Wasmann knew only the female, but the male of a second species, *S. castanea*, has been since described by Kieffer from the Pyrenees in Southern France where it lives in nests of *Solenopsis geminata*.[1] Like the female, the male is practically wingless, but the antennæ are not so strongly clavate.

Solenopsia differs from all other Diapriidæ in the form of the abdominal petiole which is developed into an elevated node like that found only in certain ants, although it resembles that of a formicine or dolichoderine rather than that of a myrmicine ant, and the host with which it has been found in Europe is one of the Myrmicinæ.

Last summer I received from Professor C. H. Kennedy of Ohio State University several very beautifully executed pencil sketches of a minute strange hymenopterous insect that had been found in a nest of *Prenolepis parvula* in eastern Tennessee by Professor Clyde Dennis of Tusculum College. These sketches indicated that it was either a diapriid like Solenopsia or perhaps an aberrant embolemid.

At Professor Kennedy's suggestion I have since examined the specimen and it proves without question to be a species of Solenopsia, the first to be discovered in the New World.

It is closely similar to the European forms but the resemblance between the abdominal petiole and that of its host is much closer than that of the Old World species to their myrmicine hosts.

---

[1] Wasmann cites it as a guest of this ant, although Kieffer gives *S. fugax* as the host ant.

The new species is described below, illustrated by several figures drawn by Mrs. A. S. O'Connor. The latter are to a great extent based on Dr. Kennedy's very excellent sketches which he placed at our disposal.

Solenopsia Wasmann.

Zoologica, Heft 26, p. 171 (1899).

Solenopsia americana sp. nov. (Fig. 1)

♀. Length 1.3 mm. Black; the thorax and abdominal petiole light reddish brown; the abdomen stained with brown below on the sides basally and pale at extreme tip; legs and antennæ more yellowish than the thorax. Head smooth and shining; the eyes small, rounded, placed well forward on the sides of the head at about the middle; ocelli small, in a small equilateral triangle. Antennæ 11-jointed, inserted above a very narrow shelf at the level of the eyes; scape long, nearly as long as the head, curved and much thicker toward apex; pedicel longer than wide, about one-fourth as long as the scape; first flagellar joint much narrower than the pedicel, especially at the base; following six joints gradually wider and of about equal length, each shorter than the pedicel; last three joints forming a large, abrupt club, the basal joint narrowed at base, the second widest and the third longest. Seen in profile the head is evenly arcuate above and the long, sharply receding face forms a straight line above, curving inward toward the mouth; mandibles small, more or less triangular and apparently pointed at apex. Pronotum short at the median line, but extending back to the tegulæ as a broad lateral band on each side of the mesonotum; scutellum separated by a very fine transverse basal suture, its posterior narrowed portion convex, with the basal impression single, with each side bent posteriorly in the form of a broad, inverted crescent; propodeum much narrowed above with the apex sharply widened and concave behind to form two backwardly directed arms which encircle the sides of the abdominal petiole when the latter is turned upwards, these arms more or less acute apically. Upper surface of abdominal petiole steeply sloping forwards, about twice as long as wide, the petiole much broader below; the sides moderately woolly. Second segment occupying nearly two-thirds the length of the abdomen; following tergites short, slightly decreasing in length apically. Ovipositor short, with two short, rather broad valves when seen from above. Legs moderately stout, the trochanters very long; all the femora and tibiæ clavate, the front tibia with a very long, curved spur arising well be-

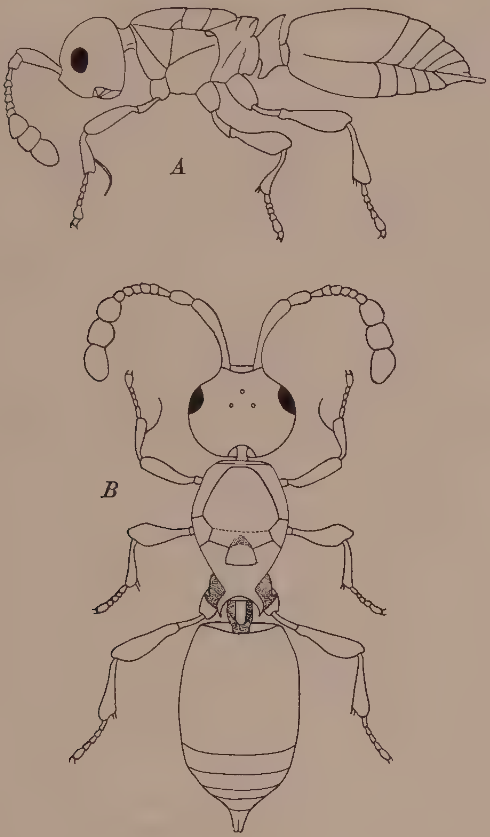


Fig. 1. *Solenopsia americana* sp. nov. *a*, lateral view; *b*, dorsal view.

fore the apex. Wings preserved as vestiges; neither fore wing present in the type, but one very small hind wing remains attached as an oval, apparently complete wing with a costal vein-like thickening, this wing reaching about to the tip of the propodeum.

Type from Eastern Tennessee, collected in a nest of *Prenolepis parvula* Mayr, by Professor Clyde Dennis. The type is in the collection of the Ohio State University, Columbus, Ohio.

There is another genus in North America which is very similar to Solenopsia. This is Auxopædeutes first discovered by Professor W. M. Wheeler as a guest of *Solenopsis molesta* near Austin, Texas and described by the present writer in 1903.[2] Later, I found a second species in Eastern Massachusetts also in a nest of *Solenopsis molesta.*[3] Auxopædeutes differs from Solenopsia in having twelve joints in the antennæ and by the less modified petiolar segment of the abdomen. The latter is slightly raised dorsally, but does not rise scale-like as in Solenopsia and its rounded dorsal boss lies under and not between the propodeal processes. In both species of Auxopædeutes the wings are completely absent and not represented by vestiges.

Still another genus, Trimicrops Kieffer should be compared with Solenopsia. Kieffer placed this in the Calliceratidæ[4] although it differs from all members of that family in the form of the head and insertion of the antennæ on a shelf far above the clypeus as in the Diapriidæ. I have never seen specimens of Trimicrops, but suspect very strongly that it also is a diapriid, quite similar to the genera discussed above.

---

[2] Trans. American Entom. Soc., vol. 29, p. 126.

[3] Bull. Wisconsin Nat. Hist. Soc., vol. 8, p. 82 (1910).

[4] Ann. Soc. Sci. Bruxelles, vol. 30, p. 16 (1906) and also Das Tierreich, Lief, 42, p. 127 (1914).

AN ODD HIBERNACULUM

By H. Elliott McClure

It is well known that birds' nests, mice nests, loose bark, and other hiding places serve as hibernacula for numerous insects, but the winter inhabitants of a bald faced hornet's nest, *Vespa maculata* Kirby, were surprising.

On March 4, 1933 in the Brownsfield woods, an oak-maple woods near Urbana, Illinois, a large *Vespa* nest, forty feet above the ground, was discovered on a limb of a sugar maple tree. It was secured and removed to the laboratory for examination. At the time it was taken the temperature was 2° C.

The nest was 32 centimeters wide and 45 centimeters long with 13 layers of paper on the outside and six tiers of cells. It weighed 407 grams. The opening was not at the bottom, but several centimeters up on the side. Below this hole in the bottom of the nest was a sort of graveyard. 100 dead adults were massed there and of these the sex of 52 was identifiable. They were all males. Of the 2720 cells in the six tiers 165 were still capped and contained pupae or adults and there were 30 dried and shriveled larvae in uncapped cells.

Soon after the hive was brought into the warm laboratory a rustling was noted thruout it. Upon tearing it apart 65 cockroach nymphs, *Ischnoptera pennsylvanica* (De Geer), were captured. They were hiding in between the layers of paper. Besides these, three spiders (*Philodromus pernix*), two spiders (Drassus, immature) and six undetermined mites were found. Thus there were 76 arthropods hibernating in these quarters. Probably the roaches came to the nest for the food available and may have been there before the winter set in. The spiders probably moved in with the advent of cold weather. The rôle played by the mites was not determined.

TWO RECENTLY INTRODUCED SPECIES OF AMARA (COLEOPTERA: CARABIDAE)

By P. J. Darlington, Jr.

Museum of Comparative Zoölogy

During recent years the following two species of Amara have been common in the Boston region, even on the streets of the suburbs. They are not, however, represented in the collection of the former Boston coleopterist Roland Hayward, whose revision of Amara was completed about 1906. This makes it practically certain that the species have been introduced since that time. Both are common European species. My identifications have been confirmed through the kindness of Mr. Arnošt Jedlička of Prague. Mr. L. L. Buchanan, after a comparison of specimens with the Casey Collection, has determined the synonymy cited.

Amara (*s. s.*) *aenea* (Deg.) (*devincta* Csy.): I have seen this species not only from Boston but from Walton, New York, G. W. Herrick collector (U. S. N. M.). The type of Casey's *devincta* (Memoirs 8, 1918, 307) was from New London, Connecticut. *A. aenea* is similar to our western American *cœlebs* Hayw., to which it runs in Hayward's key (Trans. American Ent. Soc. 34, 1908, pp. 49-50). In fact *cœlebs* differs from *aenea* (known from Europe and Siberia), so far as I can see, only in its (*cœlebs*) somewhat broader and less convex form.

Amara (*s. s.*) *familiaris* (Duft.) (*humilis* Csy.): Casey's specimens (*l. c.*, 302) were from Rhode Island and Long Island. The species is common in eastern Massachusetts (Boston, Nahant, Ipswich) and in New Hampshire (Exeter, Rumney, Mt. Washington, Connecticut Lake). It differs from all our native Amara (*s. s.*) in its small size (6 mm., more or less) and pale legs. It resembles some of the species of subgenus Celia, but the hind tibiae of the ♂ are distinctly, although not conspicuously, pubescent within near the apex.

NEW AND LITTLE KNOWN SPECIES OF TEGENARIA
(Araneida: Agelenidae)

By Harriet Exline

University of Washington

Three new species of Tegenaria have been found in the Pacific Northwest and are described in this paper. Two other species, *Tegenaria nana* Simon and *Tegenaria californica* Banks, are included because they are quite common in the Northwest, and because their original descriptions included no figures. The most common Tegenaria represented in this locality is the cosmopolitan species *Tegenaria derhami* (Scop.), a description of which is omitted because it is adequately described and figured elsewhere (Emerton: Common Spiders, 1902, p. 96; ibid: New Eng. Spiders, Trans. Conn. Acad., Vol. VIII, 1889, p. 29, f. 6.).

Notes of appreciation are expressed to Miss Elizabeth B. Bryant of the Museum of Comparative Zoölogy for identifying specimens of Tegenaria, and to Drs. Melville H. Hatch and Robert C. Miller of the University of Washington for their help and inspiration, and especially to Professor Trevor Kincaid for the loan of his collection of spiders.

Tegenaria gigantea Chamberlin and Ivie (Fig. 3)

Tegenaria gigantea Chamberlin and Ivie, 1935, Bull. Univ. Utah, vol. 26, p. 31, pl. XIII, f. 106.

Male: Length 15 mm., with extremely long, slender and hairy legs. Cephalothorax reddish yellow, becoming quite reddish on cephalic part and almost black around and in front of the eyes. The cephalic part is rounded, highest in the center, the sides are almost parallel, and the entire cephalic region is raised and sharply separated from the thoracic part which is rather flat and almost circular in outline. The chelicerae and mouthparts are almost black, somewhat geniculate, with prominent yellow condyles. The eyes are about equal in size, although the posterior eyes are not quite so large as the anterior eyes, the posterior eyes in a slightly procurved row, well and equally separated; anterior eyes in an almost straight row (from a dorsal view) and closer together. Anterior median eyes the radius of one of them apart, and not quite so far from the anterior lateral eyes. Legs tannish yellow except femora of first pair which are brown; the first leg measures 4.5 cm. The abdomen is slender, and yellow with many dark gray markings; the area in the anterior median region is unmarked. The hind spinnerets are long, with the apical segments a little longer than the basal segment. The palpus is slender with the cymbium well clothed with long hairs. The tibia of the palpus is slightly swollen distally and has two large tooth-shaped apophyses extending latero-anteriorly on the lateral side. The embolus of the bulb is slender and arises from the inner distal margin, curving laterally to end in a projecting conductor in the lateral posterior region.

Male, collected at Nanaimo, B. C. by Professor Kincaid, Sept. 8, 1934. (Exline Coll.)

This species nearest *Tegenaria derhami* Scop. from which it is separated by its much greater length and by the structure of the bulb of the palpus.

Tegenaria quadrata n. sp. (Fig. 4)

FEMALE: Length 5.6 mm. Cephalothorax brownish yellow with a few irregular gray marks including a narrow marginal line, and a row of spots between this and the median furrow opposite the legs, and a large median gray area. Chelicerae and legs same color as the cephalothorax, legs banded with gray. Eyes large and quite widely separated; posterior eyes in a straight row equally spaced and equal in size; anterior median eyes smaller than other eyes separated by a distance once and a half as great as their diameter, nearer the anterior lateral eyes; thus the rectangle formed by the median eyes is large and perfect, longer than wide. Abdomen globose with a gray-white background and many darker gray markings. The apical segment of the hind spinnerets is a little shorter than the basal segment. The area of the epigynum is raised and heavily chitinized; on the anterior margin is a small depression which obviously bears pores leading into the spermathecal ducts; these ducts are indistinctly seen through the chitin extending from the depression almost to the genital furrow in the midline. The spermathecae can be indistinctly seen in the anterior lateral parts of the epigynum.

HOLOTYPE: Female, collected at Seattle, Wash., by Professor Kincaid. (Exline Coll.)

Closest to *Tegenaria californica* Banks, but separated by the much greater distance between the anterior median eyes, and the large chitinized area of the epigynum which is negligible in *T. californica.*

Tegenaria magnacava n. sp. (Fig. 5)

FEMALE: Length 11 mm. Cephalothorax light reddish yellow with grayish streaks on the sides, cephalic part only a little darker than the thoracic; cephalothorax moderately rounded with no great demarcation between cephalic part and thoracic. Chelicerae quite geniculate in front, red in color. Legs well clothed with hair, moderately long and tannish or reddish yellow. Eyes of equal size, those of posterior row somewhat procurved, widely and equally spaced. Eyes of anterior row almost equally spaced, but slightly nearer each other than those of posterior row. Abdomen with a light yellowish gray background and mottled and checked with dark gray markings. Epigynum large surrounded by a thick posterior fold of chitin and an anterior semicircular fold; the cavity formed by these is large and deep. See fig.

HOLOTYPE: Female, collected at Seattle, Wash., Nov. 20, 1930. (Exline Coll.)

Similar in size and physical structure to *Tegenaria derhami* Scop. The epigynum is entirely different in form from that of any other species, consisting of a large cavity surrounded by chitinous folds.

Tegenaria nana Simon (Fig. 1)

Tegenaria nana Simon 1897, Annal. Soc. Entom. Belgique, Vol. XLI, p. 17.

FEMALE: Length, 4.0-5.5 mm. Cephalothorax tannish yellow with three indefinite gray spots on each side of the thorax, a marginal gray band and a few gray lines on the head part; cephalothorax rather roundly arched. Chelicerae not at all geniculate. Eyes large in proportion to size of spider; posterior eyes in nearly straight row, almost equally distant (less than a diameter of one of the eyes) and equal in size; eyes of anterior row very close together and median eyes considerably smaller than the lateral eyes. Legs yellow in some specimens, orange or tan ringed with gray in other specimens. Abdomen globose, pale grayish yellow with many dark gray markings especially in the posterior half; these markings form a row of double concave arches down the center of the back posteriorly. Apical segment of hind spinnerets is slightly shorter than the basal segment. The epigynum is raised, rounded off imperceptibly into the venter; in its center is a heart-shaped dark reddish brown chitinized area, which shows two slight impressions; these are the openings to the ducts leading to the spermathecae; posterior to this area is a slender median dark band running to the epigastric furrow; this dark band is caused by the ducts which lead into the spermathecae, which in a few specimens are slightly visible as round balls underneath the chitin.

MALE: Length, 4.0-4.5 mm. Cephalothorax very evenly rounded with cephalic grooves very shallow, yellow in color with very slight gray markings. Chelicerae, and relationships between the eyes as in female; legs about the same except that they are more solidly one color, yellow, or orange brown. Abdomen slender, white background with dark gray markings numerous in the posterior part, very much as in the female. Hind spinnerets with apical segment a little shorter than basal segment. Tibia of male palpus with two basal teeth, black in color on the lateral margins, then a deep horizontal groove which ends in the middle of the segment with a rather large black, flat projection directed anteriorly; on the distal margin of the tibia it bears another lateral projection pointing anteriorly. The cymbium of the palpus is deeply rounded in its body part but anteriorly slenderizes suddenly and has a narrow, short tip.

HYPOTYPES: Male specimens, collected March 24, 1932, and Oct. 1, 1932, Olympia, Washington (Exline Coll.).

Female specimens from Seattle, Olympia, and Beaver Creek, Oregon.

Tegenaria californica Banks (Fig. 2)

Tegenaria californica Banks[1] 1896 Journ. Ent. News, Vol. 4, p. 90.

FEMALE: Length 7-9 mm. Cephalothorax orange marked with black lines and spots; legs long, hairy, ringed with dark gray. Posterior eyes in straight row, almost equidistant, laterals slightly larger than the medians; anterior eyes with medians smaller than laterals and further apart than from laterals. Abdomen large, globose, gray with light spots; posterior spinnerets with hind segment slightly shorter than basal segment. The area of the epigynum is decidedly convex, with a small shallow atrium in the center, in which two very small spots mark the opening of the spermathecal duct; the spermathecae show slightly through the chitin in the anterior lateral margins; a dark ridge of chitin extends posteriorly from the center of the posterior margin of the atrium to the epigastric furrow.

MALE: Length 5-6.5 mm. Eyes all equal in size, eyes of posterior row and anterior row all equidistant. Tibia of palpus with a basal, almost horizontal, apophysis and a distal pointed apophysis on the lateral margin; embolus almost encircling bulb.

Distribution in Washington: Western part of state. Specimens from Stillaquamish River (Snohomish Co.); Lebar, Olympia Mts.; Fort Canby (Pacific Co.); Everett; Seattle; and Olympia (in Exline Coll.).

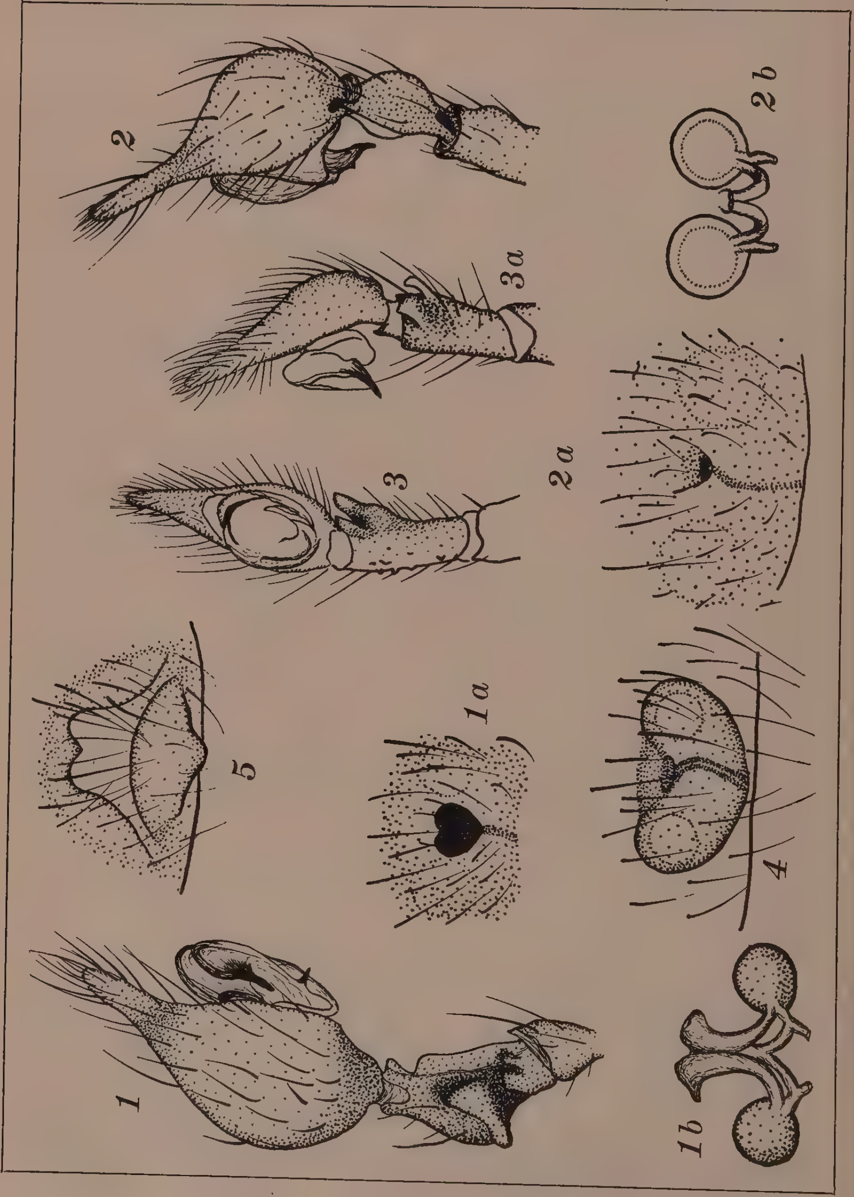
---

[1] Identifications of this and above species kindly made by Miss Elizabeth B. Bryant of the Museum of Comparative Zoölogy, Harvard University.

EXPLANATION OF PLATE 1.

Figure 1, 1a, 1b. *Tegenaria nana* Simon. (1, palpus of male, × 29; 1a, epigynum of female; 1b, epigynum of female dissected out from a NaOH solution) × 63.
Figure 2, 2a, 2b. *Tegenaria californica* Banks. (As above.)
Figure 3, 3a. *Tegenaria gigantea* Chamberlin and Ivie. (3, ventral view of palpus; 3a, lateral view of palpus) × 13.
Figure 4. *Tegenaria quadrata* n. sp. (Epigynum of female) × 63.
Figure 5. *Tegenaria magnacava* n. sp. (Epigynum of female) × 63.

Psyche, 1936 Vol. 43, Plate I.



Exline — Species of Tegenaria.

BOOK REVIEW.

Our Enemy the Termite, By Thomas Elliot Snyder.

Comstock Publishing Company, Ithaca, New York, pp. xii 196, 57 illustrations.

In this book Dr. Snyder, senior entomologist of the Bureau of Entomology and Plant Quarantine of the United States Department of Agriculture and one of the earliest members of our increasing band of termitologists, has given us a succinct and authoritative account, with abundant illustrations, of the caste system, feeding and nesting behavior, guests, parasites and fossil record of termites in general and of the more important of the nearly 60 North American species in particular, with detailed suggestions concerning the best methods, based on much observation and experimentation by the Department of Agriculture, of controlling their depredations. Owing to its brevity the account will probably find many readers who lack the time or inclination to peruse the larger volumes of Hegh and of the California students of termites ("Termites and Termite Control by Kofoid, Light and Others, 2nd edit. University of California Press). Dr. Snyder maintains with Imms and some other authors that the termite castes have a genetic and not a trophic origin, and agrees with Emerson that the worker caste is phylogenetically derived from the soldier. The student of other social insects will not fail to find in the first and second chapters of the book many interesting statements such as the one on page 5, that "termite queens in artificial colonies are known to have lived for twenty-five years," which is longer than the longest record (17 years) for ant queens, and the statement that termite eggs secrete exudates, one that may also be true of ant eggs, though not hitherto advanced by myrmecologists. Several of the illustrations are very striking, such as those of the similar egg-masses of the subsocial cockroach, *Cryptocercus punctulatus* and the most primitive of living termites, *Mastotermes darwiniensis*, the figure of *Cryptotermes brevis*, with its phragmotic head, so like that of the ants of the subgenus Colobopsis, and the figures illustrating the great damage by termites to woodwork, books, clothing, shoes, firearms, etc. The systematist will be interested to learn that: "It may eventually be proven that new species of *Reticulitermes* are being evolved, i.e., there are now 'nascent' species, or species in the making. Certain species are very close morphologically, and races or sub-species exist with composite characters; close species may be merely variations! Or, since termites are plastic, or easily moulded, it may be that there is a tendency toward a mean, and in reality there are no sub-species."

As would be expected from so competent an entomologist, there are few errors in the book and these are unimportant. The term "zorapterids" (p. 19) is not correctly rendered by "wingless forms of life", if the author really supposed the first syllable to be derived from *zoe*, nor are the jaws of *Capritermes* "goat-like"; the species of Megachile and Euglossa (p. 98) are not "large wasps," but bees, and the authority for *Amitermes wheeleri* (p. 175) is not "Dean," but Desneux. The arrangement of the text might have been considerably improved in places and the style, though usually clear, seems lacking in vitality, especially in the last chapter, which deals with matters in which it is difficult to sustain a general reader's interest.

Cambridge, Massachusetts. W. M. Wheeler.
January 29, 1936.

PIN-LABELS IN MULTIPLES OF 1000, ALIKE

One Dollar Per Thousand

Smallest Type. Pure White Ledger Paper. Not over 4 Lines nor 30 Characters (13 to a line) Additional Characters, 3 cents each, in total and per line, per 1000. Trimmed so one cut makes a label.

C. V. BLACKBURN, 7 Emerson St., STONEHAM 80, MASS.

CAMBRIDGE ENTOMOLOGICAL CLUB

A regular meeting of the Club is held on the second Tuesday of each month (July, August and September excepted) at 7.45 p.m. in Room B-455, Biological Institute of Harvard University, Divinity Ave., Cambridge. Entomologists visiting Boston are cordially invited to attend.

WARD'S ENTOMOLOGICAL SERVICES

Entomological Supplies and Equipment

Carefully designed by professional entomologists. Material of high quality at low prices. **Send for Supply Catalog No. 348.**

Insect Preparations

Life Histories, Type Collections, Collections of Economic Insects and Biological Insect Collections. All specimens are accurately determined.

Insects for the Pest Collection

We have in stock over three hundred species of North American Insect Pests. **Send for Price List No. 349.**

Ward's Entomological Bulletin

A monthly publication sent free to all entomologists requesting it.

Information for the Beginner

Send for **"Directions for Collecting and Preserving Insects"** by Dr. A. B. Klots. A mine of useful information. Price 15 cents.

WARD'S NATURAL SCIENCE ESTABLISHMENT, Inc.
P. O. Box 24, Beechwood Station
Rochester, N. Y., U. S. A.
The Frank A. Ward Foundation of Natural Science of the University of Rochester

COMPLETE SET OF PSYCHE

Volumes 1-38 (Bound) For Sale

Please communicate with Richard Dow, Boston Society of Natural History, 234 Berkeley St., Boston, Mass. This is the set belonging to the late Mr. C. W. Johnson. Other books and periodicals from Mr. Johnson's library are also for sale.

BACK VOLUMES OF PSYCHE

The Cambridge Entomological Club is able to offer for sale the following volumes of Psyche. Those not mentioned are entirely out of print.

Volumes 2, 3, 4, 5, 6, 7, 8, 9, 10; each covering a period of three years, $5.00 each.

Volumes 12, 14, 17, each covering a single year, $1.00 each.

Volumes 18, 19, 20, 21, 22, 23, 24, 25, 26, each covering a single year, $1.50 each.

Volumes 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, each covering a single year, $2.00.

Orders for 2 or more volumes subject to a discount of 10%.

Orders for 10 or more volumes subject to a discount of 20%.

A set of all the volumes available (38 in all) will be sold for $75.00.

All orders should be addressed to

F. M. CARPENTER, Associate Editor of Psyche,
Museum of Comparative Zoölogy,
Department of Entomology,
Cambridge, Mass.